



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|---------------------------|---------------------|------------------|
| 10/525,606 | 02/25/2005 | Edgar Bolin th | 112740-1058 | 7978 |
| 29177 7590 09/23/2008 BELI., BOYD & LLOYD, LLP P.O. BOX 1135 CHICAGO, IL 60690 | | | | |
| EXAMINER | | | | |
| HO, HUY C | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 2617 | | | | |
| MAIL DATE | | DELIVERY MODE | | |
| 09/23/2008 | | PAPER | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/525,606

Applicant(s)

BOLINTH ET AL.

Examiner

HUY C. HO

Art Unit

2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 10-20 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 25 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/5508)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/11/2008 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 10-20, filed 07/11/2008 have been considered but are moot and not persuasive.

The argued features, i.e., a method for transmitting data in a multi-carrier system, where frequencies are subdivided into sub-carriers, and the method comprises monitoring a transmission characteristic; performing an adaptive pre-emphasis of a send signal for a part of the carrier frequencies of the at least one sub-carrier band, thereby reducing inter channel interference caused by at least two subscribers, the part of the carrier frequencies of the at least one sub-carrier band wherein the subset includes sub-carrier bands of the at least two subscribers that are adjacent providing that the adaptive pre-emphasis relates only to, the part of the carrier frequencies being a subset of the at least one sub-carrier band, read upon Gudmundson in view of Ramesh as follows.

Gudmundson teaches a method and system for data transmission in a OFDM system, a plurality of sub-carriers are transmitted over channels of the OFDM system (see col 1 lines 10-67), Gudmundson teaches an algorithm of frequency adjustment in order to reducing inter frequency interference for adjacent signals (see col 4 lines 63-67, col 5 lines 1-67, col 6 lines 1-55), therefore Gudmundson discloses a method for transmitting data in a multi-carrier system, where frequencies are subdivided into sub-carriers, and the method comprises monitoring a transmission characteristic; performing an

Art Unit: 2617

adaptive pre-emphasis of a send signal for a part of the carrier frequencies of the at least one sub-carrier band, thereby reducing inter channel interference caused by at least two subscribers, the part of the carrier frequencies of the at least one sub-carrier band wherein the subset includes sub-carrier bands of the at least two subscribers that are adjacent providing that the adaptive pre-emphasis relates only to, the part of the carrier frequencies being a subset of the at least one sub-carrier band.

Thus, the argued features were written such that they read upon the cited reference.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

Art Unit: 2617

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 10-13 and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gudmundson et al. (5,790,516) further in view of Ramesh (6,463,105).

Consider claim 10, (currently amended) Gudmundson discloses a method for transmitting data in a multi-carrier system to which a frequency band is assigned, for which carrier frequencies are subdivided into at least one sub-carrier band dividing the frequency band (see the abstract), the method comprising:

monitoring a transmission ~~channel~~ characteristic;

performing, on a send side, and depending on the transmission ~~channel~~ characteristic, an adaptive pre-emphasis of a send signal for a part of the carrier frequencies of the at least one sub-carrier band (see col 1 lines 9-13, col 3 lines 65-67, col 4 lines 1-5, col 4 lines 15-22, describing pulse shaping function being multiplied with a OFDM data signal before transmission over a channel in a purpose of lessening the effect of Doppler effect and inter symbol interference), thereby reducing inter channel interference caused by at least two subscribers (see col 4 lines 63-67, col 5 lines 1-67, col 6 lines 1-55), the part of the carrier frequencies of the at least one sub-carrier band wherein the subset includes sub-carrier bands of the at least two subscribers that are adjacent (col 4 lines 63-67, col 5 lines 1-67, col 6 lines 1-55), and

Art Unit: 2617

providing that the adaptive pre-emphasis relates only to, the part of the carrier frequencies being a subset of the at least one sub-carrier band (col 4 lines 63-67, col 5 lines 1-13, col 6 lines 1-55, describing sub-carrier frequency adjustment).

Gudmundson does not specifically show monitoring a transmission characteristic, but it is noticeable Gudmundson teaches in a downlink transmission, a base station multiplexes all users on different sub-carriers, and each mobile station user can be assigned a set of sub-carriers used by the particular base station for performing the construction of OFDM signals (see col 2 lines 50-67), thus this implies transmission channel being controlled by the base station. Ramesh teaches method and system for estimation of the carrier to interference ratio of a channel response to the channel characteristics over an estimation time period and teaches monitoring the downlink channel over a time period (see the abstract, col 3 lines 20-67, col 4 lines 1-60, col 8 lines 59-67), thus Ramesh discloses monitoring a transmission characteristic.

Since both Gudmundson and Ramesh teach method and system for data transmission in OFDM systems, it would have been obvious to one skilled in the art to modify Gudmundson's teachings and combining Ramesh's teachings of monitoring transmission characteristics so as to improve method and system discussed by Gudmundson (see col 1 lines 5-67, col 2 lines 1-67 and col 3 lines 1-62).

Consider claim 20, (currently amended) Gudmundson discloses a transmit device for transmitting data in a multi-carrier system to which a frequency band is assigned, of which carrier frequencies are subdivided into at least one sub-carrier band subdividing the frequency band (see the abstract), comprising:

parts for monitoring a transmission ~~channel~~ characteristic; and

parts for pre-emphasis of a certain part of the carrier frequencies of the at least one sub-carrier frequency of a send signal, which is adaptively performed depending on the transmission ~~channel~~ characteristic such that the pre-emphasis relates only to the certain part of the carrier

Art Unit: 2617

frequencies of the at least one sub-carrier band (see the abstract, col 3 lines 20-30, 44-67, col 4 lines 30-40, col 6 lines 1-25, describing estimation of a carrier, communication channel interference, channel response characteristics over a time period, and sub-carrier frequency adjustment), thereby reducing inter channel interference caused by at least two subscribers (see col 4 lines 63-67, col 5 lines 1-67, col 6 lines 1-55), the certain part of the carrier frequencies being a subset of the at least one sub-carrier band, wherein the subset includes sub-carrier bands of the at least two subscribers that are adjacent (see col 4 lines 63-67, col 5 lines 1-67, col 6 lines 1-55).

Gudmundson does not specifically show monitoring a transmission characteristic, but it is noticeable Gudmundson teaches in a downlink transmission, a base station multiplexes all users on different sub-carriers, and each mobile station user can be assigned a set of sub-carriers used by the particular base station for performing the construction of OFDM signals (see col 2 lines 50-67), thus this implies transmission channel being controlled by the base station. Ramesh teaches method and system for estimation of the carrier to interference ratio of a channel response to the channel characteristics over an estimation time period and teaches monitoring the downlink channel over a time period (see the abstract, col 3 lines 20-67, col 4 lines 1-60, col 8 lines 59-67), thus Ramesh discloses monitoring a transmission characteristic.

Since both Gudmundson and Ramesh teach method and system for data transmission in OFDM systems, it would have been obvious to one skilled in the art to modify Gudmundson's teachings and combining Ramesh's teachings of monitoring transmission characteristics so as to improve method and system discussed by Gudmundson (see col 1 lines 5-67, col 2 lines 1-67 and col 3 lines 1-62).

Consider claim 11, (previously presented) A method for transmitting data as claimed in claim 10, Gudmundson, as modified by Ramesh, further discloses wherein the pre-emphasis is performed by at least one of a filtering and a windowing in at least one of a time and a frequency range (col 7 lines 1-65, describing FFT circuit being used, pulse shaping multiplier, OFDM symbol time and frequency bandwidth).

Consider claim 12, (previously presented) The method for transmitting data as claimed in claim 11, Gudmundson, as modified by Ramesh, discloses wherein the filtering is performed by a signal filter which exhibits substantially high filter rates of change in the frequency range (col 3 lines 25-40).

Consider claim 13, (previously presented) A method for transmitting data as claimed in claim 11, Gudmundson, as modified by Ramesh, discloses wherein a window function is used which is embodied such that the windowing is executed in the time range with an over sampling being used to achieve high-filtered rates of change in the frequency range (col 3 lines 25-40, col 7 lines 5-21, col 8 lines 13-20).

Consider claim 15, (previously presented) A method for transmitting data as claimed in claim 10, Gudmundson, as modified by Ramesh, further discloses wherein the multi-carrier system is used in combination with an FDMA method (col 1 lines 15-35, col 2 lines 55-67).

Consider claim 16, (previously presented) A method for transmitting data as claimed in claim 15, Gudmundson, as modified by Ramesh, further discloses wherein the FDMA method is an OFDMA method (col 1 lines 15-35, col 2 lines 55-67).

Consider claim 17, (previously presented) A method for transmitting data as claimed in claim 10, Gudmundson, as modified by Ramesh, further discloses wherein the pre-emphasis is limited to carrier frequency in edge areas of the at least one sub-carrier which is assigned to one user (col 3 lines 20-55, col 4 lines 5-15).

Consider claim 18, (previously presented) A method for transmitting data as claimed in claim 17, Gudmundson, as modified by Ramesh, further discloses wherein the edge areas border on other sub-carrier bands (col 3 lines 20-55, col 4 lines 5-15).

Consider claim 19, (previously presented) A method for transmitting data as claimed in claim 13, Gudmundson, as modified by Ramesh, further discloses wherein a value of a first symbol duration assigned to one of the emphasized carrier frequencies remains the same (col 5 lines 1-41, the

Art Unit: 2617

duration is the same for pulse shaping carriers), and wherein, with regard to one of the time range windowing and the frequency range filtering, an overall length of a time range window not exceeding an OFDM useful symbol duration as well as a duration of a cyclic prefix and a necessary rate of change of the sub-carriers is determined by the over sampling (col 3 lines 25-40, col 7 lines 5-36, col 8 lines 13-20, describing the FFT frame OFDM symbol time and are constant for a given frequency bandwidth, for a cyclic extension).

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gudmundson et al. (5,790,516), in view of Ramesh (6,463,105) and further in view of Muri (4,513,385).

Consider claim 14, (previously presented) A method for transmitting data as claimed in claim 13, Gudmundson, as modified by Ramesh, further discloses wherein the window function (see col 6 lines 14-25, col 8 lines 50-67). Gudmundson, as modified by Ramesh however, does not specifically show window function is one of a Blackman, Bartel, Kaiser, and Papoulis window function. Muri teaches a method and apparatus for digital sampled system, more specifically, Muri teaches mathematical algorithms for filtering predetermined frequencies using DSP digital filtering techniques, i.e., filtering windows as rectangular window, Bartlett, Blackman and Kaiser windows (see col 1 lines 13-67, col 2 lines 1-29), thus Muri discloses predetermined frequencies samples transmission are filtered by usage of various types of digital filtering windows, e.g., rectangular window, Bartlett, Blackman and Kaiser windows.

Since both Gudmundson, Ramesh and Muri teach a method and system for digital signal processing in communication system, it would have been obvious to one skilled in the art to modify the teachings of Gudmundson, as modified by Ramesh by combining teachings of Muri of using variety of digital filtering windows such as Blackman, Bartel and Kaiser, so as to improve the method and system discussed by Gudmundson, as modified by Ramesh.

Art Unit: 2617

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUY C. HO whose telephone number is (571)270-1108. The examiner can normally be reached on Monday - Friday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duc Nguyen can be reached on 571-272-7503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Duc Nguyen/
Supervisory Patent Examiner, Art Unit 2617